

The Relationship between Students' Involvement in 21st Century Classroom Learning Activities and Higher Order Thinking Skills

(Hubungan antara Keterlibatan Pelajar dalam Aktiviti Pembelajaran Abad ke-21 dan Kemahiran Berfikir Aras Tinggi)

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ABSTRACT

The implementation of the 21st century learning among students was introduced through the Malaysian Education Development Plan (MEDP) 2013-2025. Researches suggest that students' involvement in 21st century learning activities in the classroom is related to the development of higher order thinking skills. This study was conducted to identify the level and relationship of students' involvement in the implementation of 21st century learning in the classroom and the students' higher order thinking skills. This study is a cross-sectional survey that uses questionnaires to collect data. Cluster sampling was used to choose a total of 200 Form Four students in Negeri Sembilan. Descriptive and inferential (Pearson Correlation) statistics were used to analyze the data. The findings show that students' involvement in 21st century classroom learning activities and their higher order thinking skills are at a moderate level. It was also found that there is a significant relationship between students' involvement in 21st century learning activities in the classroom with their levels of higher order thinking skills. The findings imply that students need to have a high level of readiness to ensure a successful implementation of 21st century learning in the classroom, which would contribute to their development of higher order thinking skills.

Keywords: 21st century learning, students' classroom involvement, higher order thinking skill

ABSTRAK

Pelaksanaan pembelajaran abad ke-21 dalam kalangan pelajar diperkenalkan menerusi Pelan Pembangunan Pendidikan Malaysia (PPPM) 2013-2025. Kajian-kajian lepas menunjukkan keterlibatan pelajar dalam aktiviti pembelajaran abad ke-21 dalam bilik darjah berkaitan dengan perkembangan kemahiran berfikir aras tinggi. Kajian ini dilaksanakan untuk mengenal pasti tahap dan hubungan keterlibatan pelajar dalam aktiviti pembelajaran abad ke-21 dalam bilik darjah dengan tahap kemahiran berfikir aras tinggi. Kajian ini berbentuk tinjauan menggunakan soal selidik. Sampel kajian dipilih secara rawak mudah yang melibatkan seramai 200 orang pelajar tingkatan 4 di Negeri Sembilan. Kajian ini menggunakan statistik deskriptif dan inferensi (korelasi Pearson) untuk menganalisis data. Hasil kajian menunjukkan keterlibatan pelajar dalam aktiviti pembelajaran abad ke-21 dalam bilik darjah dan kemahiran berfikir aras tinggi masing-masing berada pada tahap sederhana tinggi. Kajian juga mendapati terdapatnya hubungan signifikan antara keterlibatan pelajar dalam aktiviti pembelajaran abad ke-21 dalam bilik darjah dan kemahiran berfikir aras tinggi mereka. Implikasi kajian menunjukkan bahawa pelajar perlu mempunyai tahap kesediaan yang tinggi bagi memastikan kejayaan pelaksanaan pembelajaran abad ke-21 dalam bilik darjah, ang seterusnya akan menyumbang kepada perkembangan kemahiran berfikir aras tinggi.

Kata kunci: Pembelajaran abad ke-21, keterlibatan murid dalam kelas, kemahiran berfikir aras tinggi

INTRODUCTION

The Malaysian Education Development Plan (MEDP) 2013–2025 is a long-term plan that aims for a higher quality education through a comprehensive educational transformation. Six aspirations for Malaysian students and five aspirations for the Malaysian education system have been introduced in the MEDP to ensure that the Malaysian education system and the students will be excellent in the future. The six aspirations or attributes targeted for Malaysian students are mastery of knowledge

thinking skills, leadership skills, bilingual proficiency, ethics and spirituality as well as national identity. Meanwhile, the five aspirations targeted for the Malaysian education system are accessibility, quality, equity, unity and efficiency. At the same time, every student needs to be equipped with the 21st century learning, which includes knowledge, critical thinking and creativity, good leadership and effective communication skills (Ministry of Education 2013).

Studies have been carried out by the Ministry of Education regarding the implementation of curriculum

programs. In the year 2011, the national education system introduced a Secondary School Standard Curriculum (SSSC) program to improve students' understanding and achievement in secondary schools. The SSSC was introduced to replace the Secondary School Integrated Curriculum (SSIC) which had been introduced earlier in 1989. With SSSC, the implementation of the 21st Century Learning and Higher Order Thinking Skills (HOTS) was carried out to attract students' interest in learning as well as enhancing students' understanding in academics and influence their achievement (Ministry of Education 2013).

Students' success is being constantly measured through the process of learning in the classroom. This is because a meaningful teaching and learning process is very helpful to enhance students' interest and motivation to undergo the learning process. Even though the methods of teaching practised by the teachers in the 21st century are still centred on the teachers, they still need to play important roles in engaging the students actively in learning activities. Therefore, the application of the 21st century learning concept helps students to be more confident in academic, as well as in their future careers. Teaching and learning using the 21st century skills are very helpful for the students in order to be capable to attain national aspirations in the future (Ainun Rahmah Iberahim et al. 2017).

Thinking skills are the basis of the students' education process. The thinking ability – which is different from one student to other students – will affect the students' ways of learning, thinking speed and learning effectiveness. Hence, it is suggested that the implementation of learning is carried out based on HOTS in order to help increase the students' mastery of knowledge. Thinking skills should be applied by the students so that they can strengthen their understanding and improve their learning process. HOTS are based on oral questionings, training questions and assignments to the students. The teachers can apply and provide practices containing the elements of HOTS through the implementation of tests and exam questions' at school. Therefore, the 21st century teachers should strive to add new knowledge in order to produce more effective teaching and learning process (Nooratikah Mohd Rifin et al. 2017).

Students must master three crucial skills in the 21st century learning i.e. learning and innovation skills, information skills, media and technology as well as life skills and careers. The 21st century standard basis of learning is divided into five categories: communication, critical thinking, collaboration, creativity and value (Bulletin Shift No 4 2015). The cultivation of the 21st century learning skills is necessary and important for students in order to achieve the goals and aspirations that have been set out in the Malaysian Education Blueprint. Hence, teachers as the ultimate pillar, without fail, must educate the students and play an important role in nurturing the skills in them. It is very important that the

teachers cultivate certain characteristics as the 21st century educators (Faridah et al. 2016).

This study identifies the relationship between students' involvement in the 21st century learning activities and their level of Higher Order Thinking Skills (HOTS). The following research questions are raised:

1. What is the level of the students' involvement in the 21st century classroom learning activities?
2. What is the level of the students' Higher Order Thinking Skills (HOTS)?
3. Is there a relationship between the students' involvement in the 21st century learning activities in the classroom with their levels of higher order thinking skills?

The hypothesis tested in this study is:

H_{01} : There is no significant relationship between students' level of involvement in 21st century learning activities in the classroom with their level of higher order thinking skills

STUDENTS' INVOLVEMENT IN 21ST CENTURY CLASSROOM ACTIVITIES

The students' involvement in the 21st century learning activities in the classroom should be addressed by the teachers as they hold different positions and influence towards the students' level of involvements and willingness to learn (Wood 2002). The study suggests that students' involvement and willingness have an influence on the students' academic achievement. Thus, when planning the curriculum, teaching method and daily lesson plan, teachers should take into consideration the factors of the students' involvement and willingness. The teachers also need to know the students' various ways of learning that influence the students' involvement and willingness (Zamri 2011). In order to stimulate the students' engagement, the teachers should synchronize their teaching materials with the students' real-life experience as this will add meaningful messages to their lives (Rohani et al. 2017).

Meanwhile, Siti Faizzatul et al. (2011) states that the 21st century learning encourages students to utilize existing digital media to communicate, interact, collaborate and sharing information with other colleagues. Besides, learners must master social-interpersonal skills and communication skills. While working together in groups, they should use learning aids such as mahjong papers, diagrams and others to enable them to communicate, disseminate and sharing knowledge among friends.

The students' involvement in group activities or in pairs will enhance collaborative skills. During the discussion session, the students can give, listen and evaluate ideas or opinions among themselves. In addition, the teachers can use effective and high-level questioning techniques with their students in order to

nurture the students' critical skills so that the latter can identify problems in many other possible ways. The teachers' teaching strategies should incorporate creative elements in making sure that the students are provided with opportunities to be creative, especially from the aspects of thinking skills (Raja Abdullah et al. 2018).

In addition, the problem-solving method is a learning process that involves the students actively by participating in groups to solve given problems in rational ways. This gives the students the opportunity to apply concepts, principles and theories they have learned. In addition, it can promote critical, analytical, logical and rational thinking as well as develop their confidence level. The problem-solving process is an educational process that requires the students to use HOTS to solve the problem (Sarimah & Abreza 2011).

HIGHER ORDER THINKING SKILLS (HOTS)

Higher order thinking skills are elements of soft skills. The inculcation of HOTS among students can gain their interest and assist the students' learning process as well as improve their academic achievement. The students can apply knowledge and skills to think critically, creatively, innovatively, as well as be able to solve problems and make decisions. The students will be able to analyse, synthesize and evaluate the issues or topics discussed (Ministry of Education 2015).

The cultivation of thinking skills among students will increase their confidence and it can be seen when they are ready to answer questions asked by the teachers during the learning process. Each student has different abilities to accept and understand input. Students should quickly read between the lines, understand and interpret their understanding not only when writing answers during examinations but also when answering questions asked by the teachers in the classroom. However, students with poor performances show difficulties in interpreting and understanding the lesson. Therefore, teachers need to identify the level of the students' ability and deliver their lessons accordingly, as it will affect the students' academic achievement (Rajendran 2011).

In embracing HOTS, the usage of i-think map will enable the students to utilize it as a foundation for quick and effective understanding of the contents of learning, as well as enhancing understanding. It can generate creative thinking and inculcate thinking culture among students. In addition, the use of the taxonomy model of the plan is important to clarify the level of HOTS more clearly (Muhamad Sidek et al. 2012; Lee Hou Yew et al. 2012). Thus, HOTS and lifelong learning culture should be instilled among the students. The students need to be given opportunities to develop HOTS throughout their schooling in order for them to master the skills.

THEORIES RELATED TO STUDENTS' INVOLVEMENT IN 21ST CENTURY LEARNING ACTIVITY AND HIGHER ORDER THINKING SKILLS

The Bronfenbrenner Human Ecological System theory is used to state the students' involvement in the conduct of the 21st century learning in the classroom. It is one of the theories that expresses the function of human development. This theory states that the relationship between humans and the environment is an unhurried and persistent interaction between individuals and the environment (Bronfenbrenner 1992). The students' involvement in school learning activities is influenced by environmental support and socialization factors. Environmental support factors influence the involvement of children and adolescents to actively participate in school learning activities. The socialization factors support the students' involvement in classroom learning activities which demand active participation among students (Bronfenbrenner 1979; Morris 1998).

Thinking skills are one of the elements of student aspiration capital in the Malaysia Education Blueprint 2013-2025. Based on Bloom's taxonomy, thinking skills are divided into low-level thinking skills and high-level thinking skills. Low-level thinking in Bloom's taxonomy is the level of knowledge and understanding. For high-level thinking are the application level, analysis, synthesis and evaluation. In the meantime, Anderson has made Bloom's taxonomic improvements by using verbs to evaluate and create as higher order thinking skill. Higher order thinking skill is the ability to apply knowledge, skills and values to create a sense of reflection to solve problems, make decisions, innovate and create new things (Ministry of Education 2012).

RESEARCH METHODOLOGY

This research is a cross-sectional survey. Through cluster sampling method, 200 Form Four students from secondary schools in Negeri Sembilan was selected as respondents. Data was collected via a five-point Likert-scale questionnaire constructed based on a conceptual framework referring to the Malaysian Education Development Plan (2013). The questionnaire consists of three main sections: Part A – Demographic information of the students (4 items); Part B – Students' involvement (7 items); and Part C – Higher order thinking skills (7 items). The result of the pilot study using the Cronbach Alpha analysis for all constructs are at high reliability levels, ranging from 0.896 to 0.965. For the purposes of content validity, experienced sociologists and executed assessment were referred to, and language testing was done. The response of experts in the field on relevant aspects is taken into account in the refinement of the next instrument items.

PROFILE OF RESPONDENTS

TABLE 1. Profile of respondents

Demography	Frequency	Percentage
<i>Gender</i>		
Male	69	34.5
Female	131	65.5
<i>School location</i>		
Urban	100	50.0
Rural	100	50.0

Based on Table 1, out of the total of 200 respondents involved in this study, 69 students (34.5%) were male, while 131 students (65.5%) were female. This shows that the majority of respondents involved in this study consisted of female students. In terms of school location, 100 students (50.0%) came from urban schools and 100 students (50.0%) came from rural schools.

STUDENTS' INVOLVEMENT IN 21ST CENTURY LEARNING ACTIVITIES

The analysis of the level of the students' involvement in the classroom learning activities are summarized in Table 2. Overall results showed that the students' involvement in the 21st century learning activities (mean = 3.92 and STD = 0.871) is interpreted as being at a medium-high level.

TABLE 2. Students' involvement in 21st century learning activities

No	Students' involvement in learning activities	Mean	Standard deviation	Interpretation
	Overall score	3.92	0.871	Medium high

Discussions among friends regarding assignments have increased the ability of the students to point out their ideas or opinions. It was found that the students are always demonstrating different ways and strategies in learning to improve their ability to memorize and think critically and creatively. The findings of this study correspond to the study of Siti Faizzatul et. al. (2011) which states that the concept of learning in the 21st century encourages students to communicate, interact, collaborate and share information with other fellow students. By empowering communication skills and social-interpersonal skills, students can contribute their knowledge to and communicate with their friends about what they comprehend.

STUDENTS' HIGHER ORDER THINKING SKILLS LEVEL

An analysis of the level of the students' higher order thinking skills is shown in Table 3 below.

TABLE 3. Students' Higher Order Thinking Skills Level

No	Higher order thinking skills	Mean	Standard deviation	Interpretation
	o verall score	3.77	0.854	Medium high

Overall, the results showed that the students' higher order thinking skills (mean = 3.77 and STD = 0.854) are at a moderate-high level.

The students' engagement in learning activities enables them to present rational opinions and arguments based on relevant facts. This study is in line with the findings of Tiza Lytha Rimaya et. al. (2013) who found that HOTS among Gombak Vocational Secondary Technical students are at a moderate-high level. The findings of this study correspond to the study of Napisah et. al. (2009) who states that the students' involvement in learning activities will amplify their efficiency to interpret, identify, formulate, analyse and evaluate situations effectively in order to solve a problem.

THE RELATIONSHIP BETWEEN THE STUDENTS' INVOLVEMENT IN 21ST CENTURY CLASSROOM LEARNING ACTIVITIES WITH THE STUDENTS' HIGHER ORDER THINKING SKILLS

The relationship between the students' involvement in the classroom learning activities and their higher order thinking skills was determined using Pearson's correlation. The analysis of the relationship is shown in Table 4.

TABLE 4. Correlation between students' involvement in the 21st century classroom learning activities with the students' higher order thinking skills

d omain	Higher order Thinking Skills		Intepretation
	R	Sig.	
Students' Involvement in 21 st century classroom learning activities	0.723	0.000	Significant

**p < 0.01

Findings show that there is a significant relationship between the students' involvement in classroom learning activities and their higher order thinking skills ($r=0.723$). The strength of the relationship is strongly positive. Hence, H_0 is rejected. A positive strong correlation means that the scores of the two variables vary together in tandem, and that the high score of involvement in learning activities are associated with high score of HOTS.

This shows that as students becoming more involved in the classroom learning activities, their HOTS levels are becoming more developed.

The findings are consistent with Ainun Rahmah Iberahim et. al. (2017) which highlighted that the 21st century learning encourages the students to think critically and creatively. Students are encouraged to work with group members to explore and enquiry about a subject. This will inculcate the students to think about the sharing of ideas and giving thoughtful opinions during learning activities. Students who are motivated and active will often ask their teachers during classroom activities in order to master a particular subject. Most students are always ready to accomplish the assignment and pay attention when learning activities take place in the classroom.

The findings of this study correspond to the study of Shamsudin Muhammad et. al. (2016). It states that if the concept of thinking skills is applied to the students, it will affect the students' memory on the subject content. The application and development of thinking skills among the students will restore and improve their memory on the subject content. This shows that the element of HOTS become the catalyst for the mastery of the subject content in order to enhance the students' academic achievement.

CONCLUSION

The findings of this study show that both the students' involvement in the classroom learning activities and their levels of HOTS are at moderate-high levels. Consequently, there is a significant positive correlation between the students' involvement in the classroom learning activities and their levels of HOTS. Thinking skills are the beginning of the educational process. Students should be able to think in order to influence their way of learning, thinking speed and their learning effectiveness. Hence, the application of HOTS is important among the students to help them develop their knowledge. Students who are skilful in applying HOTS can boost their understanding and support their learning.

The implication of this study suggests that the level of the students' involvement in implementing and pursuing learning activities of the 21st century is essential as a result of their learning process. Students need to have a high level of readiness in terms of behaviour and emotion to ensure that the implementation of the 21st century learning will be fully carried out. This study is an inclusive quantitative study among students from four types of schools in urban and rural areas in Negeri Sembilan. Further studies can be carried out qualitatively for the principle of improving and obtaining detailed information on the issues discussed.

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